Background on the CWMP:

In the Village Meadows Comprehensive Wetland Management Plan (CWMP), prepared in July 2003, the Rice Creek Watershed District (RCWD) proposes to establish a wet meadow waterway and wetland system as an alternative to conducting ditch maintenance and repair in a 1,100-acre portion of their 201-square mile watershed. According to the RCWD, the CWMP was prepared to comply with the Minnesota Wetland Conservation Act and Minnesota drainage law, to guide land development in a way that would enhance natural resource protection beyond the present condition while allowing landowners to utilize their drainage benefits under state drainage law. The CWMP identified an estimated 690 acres of existing wetland in the CWMP study area, which is located in the City of Blaine, Minnesota.

The CWMP predicted that roughly 280 acres of wetland would be drained if ditches, some of which have not been maintained for over a decade, were cleaned out and repaired. The CWMP proposed modifications to drainage in the study area instead of ditch repair, consolidation of potentially drained wetlands and uplands within the CWMP area into developable blocks, and creation of a corridor of drainageways and wetlands. Upon full implementation of the proposed alternative to traditional ditch repair, the CWMP area would contain about 410 acres of wetlands, the majority of which would be created or restored wetlands. The RCWD expects that the majority of the wetlands would be protected by easements.

The CWMP identified this corridor as functionally superior to the wetlands that would exist in the study area if ditch maintenance and repair occurred. The CWMP directed future development toward the consolidated blocks of upland and filled wetland within the CWMP area, and identified additional data collection and wetland mitigation that would have to be completed for each development proposal.

Background on MVP's Role

Although the CWMP was approved under state wetland regulations, it was not subjected to CWA Section 404 authorization. RCWD asked the St. Paul District (MVP) to accept the scope and effect modeling and the wetland functional assessment results in the CWMP. If MVP accepted the CWMP results, it was anticipated that we would use the findings in our review of CWA Section 404 permit applications in the area.

MVP was concerned with inconsistencies between the CWMP and CWA Section 404 requirements, and questioned the validity of the parameters and assumptions used in the CWMP. To resolve our concerns with the technical aspects of the CWMP, MVP asked the Corps' Engineer Research and Development Center (ERDC) to independently verify the scientific validity of the RCWD's scope and effect modeling, as well as their functional assessment of the CWMP wetland communities.

CWMP Review in Two Phases

ERDC's review of the CWMP was divided into two phases. The purpose of phase 1 was to validate the assumptions and calculations associated with the CWMP. Phase 1 was limited primarily to ERDC's review of the work done for the CWMP. Also included in phase 1 was a review of the RCWD's use of MnRAM 3.0 in lieu of the original functional assessment, which

used MnRAM 2.0. Any new information provided by the RCWD was to be addressed in phase 2. Distribution of the ERDC final report is the last step in the first phase of the review.

The second phase is to review ERDC's findings and recommendations with the RCWD, and determine means for MVP to use elements of the CWMP in individual permit evaluations. MVP will also coordinate with state, federal, and local agencies to develop guidance regarding the acceptable models, applications, assumptions, and parameters in determining effects of drainage ditches on wetland hydrology, and for wetland functional assessments on a larger, planning level scale. ERDC will provide technical assistance to MVP in completing the work of phase 2.

CWMP Review, Phase 1

ERDC conducted a review of the CWMP based on information and data used at the time of the CWMP development and provided to MVP a report entitled "Review of Ditch Scope and Effect Modeling and MnRAM Analysis used to Support the Village Meadows Comprehensive Wetland Management Plan." The CWMP was completed in 2003, using MnRAM 2.0, prior to publication of MnRAM 3.0. The RCWD provided ERDC with updated wetland functional assessments that were prepared using a modified MnRAM 3.0 methodology. ERDC reviewed these functional assessments instead of the original wetland functional assessments that were prepared using MnRAM 2.0

The RCWD has provided information to MVP and ERDC in response to both the November 2005 draft and February 2006 final ERDC report. All of ERDC's findings are based on the information provided when the review was initiated, and do not address information provided by RCWD after that time. In phase 2, MVP will address the information that RCWD has provided in response to both the draft and final ERDC reports.

ERDC Report Corrections and Clarifications:

The following are corrections and clarifications to the ERDC final report.

1. In the Preface on page iv, the ERDC final report states "This report was developed in response to questions from the St. Paul District regarding the interpretation of site characteristics and modeling data related to the Comprehensive Wetland Management Plan (CWMP) for the Village Meadows development proposed by the Rice Creek Watershed District (RCWD) and prepared by Emmons and Oliver Resources (EOR). " The CWMP, not the Village Meadows development, was proposed by RCWD and prepared by EOR. As stated by RCWD staff, "the CWMP was prepared to comply with the Minnesota Wetland Conservation Act and Minnesota drainage law, to guide land development in a way that enhances natural resource protection beyond the present condition while allowing landowners to utilize their drainage benefits under state drainage law."

2. On page 1, the ERDC final report indicates that the CWMP used scope and effect modeling to estimate existing wetlands. The CWMP did not use scope and effect modeling to identify existing wetlands. Scope and effect modeling was used to estimate the existing wetlands that would be affected by potential ditch maintenance and repair activities.

3. On page 2, ERDC states that, in their review in the fall of 2004, ERDC "suggested that the permeability rates used in the scope-and-effect modeling effort were higher (more rapid) than they would recommend…based on a site visit, literature search, and updated NRCS permeability rates." The reference to updated NRCS permeability rates means that ERDC used the NRCS Soil Data Mart, as discussed on page 4 of the final report, which contains the most current soil data for Anoka County. For some soil types, such as Markey Muck and Rifle Muck, the range of hydraulic conductivities listed in the Soil Data Mart are lower than the ranges provided in the published Anoka County soil survey.

4. On pages 5 and A1, the ERDC final report references an article by Gafni and Brooks, entitled "Hydraulic characteristics of four peatlands in Minnesota," which was published in the Canadian Journal of Soil Science in 1990. This article contains an error in the formula calculating hydraulic conductivity. ERDC did not use this formula in any calculations. The article was referenced, along with several others, to indicate that very low permeabilities are associated with well decomposed organic materials.

5. In Table 1 on page 6, ERDC shows lateral effect (Le) distances, calculated with a modified van Schilfgaarde equation, for each soil type in the CWMP study area. The calculations use hydraulic conductivities (k) recommended by ERDC and using what ERDC thought was the RCWD's selected depth to drain (d) of 1.3 feet. RCWD provided information demonstrating that the depth to drain (d) in the calculations done for the CWMP varied. MVP will seek to validate RCWD's (d) values in phase 2 of the CWMP review.

Findings in the ERDC Final Report:

ERDC could not validate the scope and effect modeling used for the CWMP. ERDC determined that the assumptions used in the CWMP to calculate the amount of wetlands that would be drained by ditch maintenance and repair resulted in a considerable overestimation of potentially drained wetlands. ERDC made this determination based on information available to them when the review was initiated, and does not make use of RCWD data collected in 2005.

ERDC recommended that MVP pursue more sophisticated modeling techniques if an accurate prediction of wetland impacts that could result from ditch maintenance and repair was necessary.

ERDC was also unable to validate the wetland functional assessment results in the CWMP. ERDC determined that RCWD's wetland functional assessments did not follow the published protocol for the Minnesota Routine Assessment Method, version 3.0 (MnRAM 3.0) for wetland functional assessments. ERDC identified the changes made to the methodology, which included omitted information and deviations from MnRAM 3.0 formulas. ERDC also noted that the assessments did not include the typically required field data collection.

MVP Phase 1 Findings

The CWMP, in and of itself, is not consistent with CWA Section 404 requirements because it has not demonstrated avoidance and minimization of wetland impacts in its proposed consolidation of uplands and wetlands within the CWMP area into developable blocks.

However, the CWMP does include an analysis of alternatives to providing the drainage that is required under Minnesota drainage law. MVP will use the CWMP as a local planning document that establishes water resource management goals for the area.

ERDC's technical opinions differ from the RCWD's technical opinions with regard to scope and effect modeling, and result in a more conservative estimate of lateral drainage. MVP accepts ERDC's recommendations that result in a smaller predicted lateral drainage effect than the predicted lateral effects used in the CWMP.

MVP will use conservative estimates of lateral drainage rather than invest additional time and funds to pursue the advanced modeling that ERDC recommended. MVP will work with the RCWD in phase 2 to determine a conservative, realistic estimate of potential lateral drainage effects. We expect that this effort will result in the identification of a range of predicted lateral drainage effects that encompass both the MVP and the RCWD estimates.

As a result of ERDC's review, MVP has a better understanding of how MnRAM 3.0 was modified and used as a planning level functional assessment tool. MVP will use this knowledge in our reviews of future CWMPs within the Rice Creek Watershed. MVP will evaluate permit applications in the Village Meadows CWMP area using individual wetland functional assessments prepared in accordance with the published MnRAM 3.0 methodology.

CWMP Review, Phase 2

MVP is in the process of reviewing ERDC's findings and recommendations, as well as data and information provided by the RCWD in response to the draft and final ERDC reports, to determine what changes to the scope and effect modeling could be made so that MVP could use it in CWA Section 404 permit evaluations in the study area. MVP would use scope and effect modeling to aid in the analysis of alternatives to achieving a permit applicant's purpose.

In Phase 2, MVP will work with local, state, and federal agencies to determine appropriate parameters and assumptions for use in other plans and proposals that have a need to estimate lateral drainage effects.

MVP is also in the process of discussing with RCWD what the best approach would be in regard to the functional assessments completed in the CWMP. The RCWD's Rule M requires applicants to prepare wetland functional assessments using the published MnRAM 3.0 methodology. Therefore, MVP has determined that it would be more productive to acknowledge the limitations of the planning level functional assessments prepared for the CWMP, and focus our efforts on the potential development of a planning level wetland functional assessment tool for future use.

In Phase 2, MVP will work with local, state, and federal agencies to investigate the feasibility of developing a planning level wetland functional assessment tool. We expect that this tool would be useful in watershed studies and wetland management plans.

Important Information for Existing and Future CWA Section 404 Permit Applicants.

MVP has issued some permits for discharges in wetlands within the CWMP study area. The CWMP was not used as the sole basis for determining compliance with CWA Section 404 requirements, nor for determining the appropriate compensation for unavoidable wetland impacts. In reaching permit decisions, MVP required additional information from applicants regarding alternatives that would avoid or minimize wetland impacts.

MVP will continue to evaluate individual permit applications under the standard CWA Section 404 permit evaluation process. When evaluating proposals in the CWMP area that require individual permit applications, MVP will identify the water resource management objectives associated with the proposals, and will evaluate alternatives to achieving those objectives as well as other objectives of the proposals.

Individual permit applicants will need to identify wetland impacts associated with their proposals based on existing conditions, using wetland delineations conducted in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual (87 Manual).

Hypothetical post-drainage scenarios, such as the one identified in the CWMP, will be evaluated as an alternative to ditch maintenance and repair; they will not be used to determine existing wetland impacts of proposals subject to CWA Section 404 authorization.

Functional assessments conducted for individual permit applications must be performed in accordance with the published Minnesota Routine Assessment Method, version 3.0 (MnRAM 3.0) for wetland functional assessments.

Individual permit applicants will be asked to demonstrate avoidance and minimization of wetland impacts, through an alternatives analysis, and to demonstrate that there are no practicable alternatives to the wetland impacts associated with their proposals.

The RCWD's Rule M also requires applicants to delineate existing wetlands using the 87 Manual, to perform alternatives analyses, and to prepare wetland functional assessments using the published MnRAM 3.0 methodology.

As part of individual permit reviews, MVP will assess the cumulative aquatic resource impacts associated with past, present, and reasonably foreseeable actions. This cumulative impact assessment will be done for the watershed sub-basin identified by the RCWD as the Ditch 53-62 basin.

MVP is pursuing a comprehensive, coordinated review of the CWMP area, which would address the water resource management and the economic development objectives in the area. This review would be coordinated with all local, state, and federal agencies involved, and would include a cumulative impact assessment as described above.

Upon completion of a coordinated areawide review, MVP and individual permit applicants could use the contents and results of this review in planning their projects, particularly in the analysis of practicable alternatives and in determining appropriate mitigation for unavoidable wetland impacts.